REMARKS

I. Present Status of the Application

The Office Action rejected, under 35 U.S.C. § 103(a), claims 1-8 and 10 as being unpatentable over Admitted prior art (Admission) in view of Buczek et al. (US 4,188,592) and Dimpfl (US 4,397,823), and claim 9 as being upatentable over Admission in view of Rostaing et al. (US 5,965,786).

Upon entry of the amendments in this response, claim 1 is amended. Thus, claims 1-10 remain pending in the present application, with claims 1, 9 and 10 being independent claims. The amendment is supported by, for example, the original drawings in Fig. 2. Applicants believe that the foregoing amendments do not introduce new matter. Thus, reconsideration of those claims is respectfully requested.

II. Response to Rejections under 35 U.S.C. § 103(a)

A. Rejections on claims 1-8 and 10

1. The Office Action, at pages 2-3, rejected claims 1-8 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Admitted prior art (Admission) in view of Buczek et al. (US 4,188,592) and Dimpfl (US 4,397,823). The Examiner asserts that it would have been obvious in view of Buczek and Dimpfl to one of having ordinary skill in the art to modify apparatus of the Admission with transparent means of Buxzek to facilitate the transmission of laser bean and a

laser device of Dimpfl to provide sufficient power to decompose the pollutant from the gas streams. Applicants respectfully traverse the rejection for at least the reasons set forth below.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claimed limitations. M.P.E.P. § 2143.

The claimed invention, as recited in the independent claims 1 and 10, provides a gas scrubber comprising a gas inlet pipe, a chamber of decomposition, a transparent means, a laser device, a means for cooling, and a means for scrubbing. The laser device is arranged before the chamber of decomposition such that a laser beam, output by the laser device, passes through the transparent means and the gases flowing in the gas inlet pipe to decompose the gases into a plurality of gas radicals to initiate the reaction of decomposition.

In other words, as for example described in [0009], the laser device of the present invention is used to preliminarily produce the free radicals, so that the subsequent processes can have better efficiency.

2. Buczek et al. disclose a closed cycle chemical laser by forming an excited laser species capable of stimulated emission to produce a "continuous wave output beam" (abstract), wherein, the "gas mixing lasers" are formed in the optical cavity between the mirrors and windows (column 3, lines 43-46; column 4, lines 20-25 and 29-33; Fig. 1). Apparently, Buczek et al. are

directed to a chemical laser system to generate "gas mixing lasers" by mixing reaction gases as a source of lasers (column 1, lines 66 through column 2, lines 25), rather than a system of the claimed invention to use a laser device to transmit a laser beam through a transparent window to decompose waste gases. Thus, one of ordinary skill in the art would not be expected to use Buczek et al.'s laser device, which is generated from gases, to modify the system of the claimed invention which requires a laser to decompose the gases.

In other words, Buczek et al. (col. 4, lines 30-34) is to produce the desired laser beam 56 from the hydrogen fluoride gas. However, the present invention uses the laser to produce the gas radicals to initiate the reaction of decomposition. Buczek et al. does not disclose the laser of the invention in operation.

3. Dimpfl, on the other hand, discloses a process and apparatus using a beam of laser radiation to removing a pollutant form a gas stream. However, Dimpfl specifically states that the laser radiation exposure is preferably accomplished using "pulsed layer output" rather than "continuous laser output" (column 2, lines 60-64). Thus, in addition to that, as discussed above, one of ordinary skill in the art would not combine Buczek et al.'s lasers (generated form mixing gases) to Dimpfl's system require lasers (for decomposing gases), Dimpfl teaches away from the "continuous laser output" as disclosed by Buczek et al. Moreover, the laser beam, as disclosed by Dimpfl, is "directed counter-current to the steam" (column 3, lines 22-26 and 36-38; Fig. 1), which is different from that of the claimed invention where the laser beam passes through the transparent means and the gases flowing in the gas inlet pipe.

In other words, the process of Dimpfl is dependent on laser, which is a tool to actually process the gas. However, as mentioned above [0009], the present invention uses the laser to preliminarily produce the free gas radicals. The operation of the laser in Dimpfl does not disclose the operation of the laser in claimed invention.

It is clear that, at least because of the significant differences between the reference teachings and the claimed invention being considered as a whole, there is no requisite suggestion or motivation to combine the prior art references or to modify the prior art teachings.

Thus, claims 1 and 10 are not rendered obvious over the prior art references. Consequently, claim 2-8, as dependent on claim 1 directly or indirectly, are also non-obvious over the prior art references as a matter of law.

Accordingly, Applicants respectfully submit that the grounds of rejection have been addressed and the rejection has been overcome. Reconsideration and withdrawal of the rejection are respectfully requested.

B. Rejections on claim 9

The Office Action, at pages 3-4, rejected claim 9 under 35 U.S.C. § 103(a) as being upatentable over Admission in view of Rostaing et al. (US 5,965,786). Applicants respectfully traverse the rejection for at least the reasons set forth below.

As stated by the Examiner, Admission discloses a gas scrubber wherein "the gases are decomposed into a plurality of byproducts [] through a thermal process in the chamber of decomposition." Claim 9 also recites that gases are decomposed through "thermal process" in

the chamber of decomposition, and that a microwave radiation generator device is arranged before the chamber.

Rostaing et al., however, disclose that a microwave generator is used to converting perfluorinated and/or hudrofluorocarbon gases into reactive compounds capable of being subsequently treated "in an alkaline medium, either in solution or in solid form" (column 5, line 64 through column 6, line 4; column 6, lines 14-18). Because that the treatment subsequent to the microwave process in Admission is a thermal process but the relevant treatment taught by Rostaing et al. is a process in an alkaline medium, it is non-obvious for one of ordinal skills in the art to combine Rostaing et al.'s device and the apparatus of Admission. Due to the significant difference, it is not reasonable to expect that one of ordinary skills in the art would consider such a combination being successful.

In other words, the subsequent process of Rostaing is in alkaline medium but not the thermal process as recited in claim 9. Therefore, Rostaing et al. do not produce the gas radicals to initiate the reaction of decomposition. Rostaing et al. at least failed to disclose the recited features by using the microwave radiation generator to produce the gas radicals and to initiate the reaction of decomposition.

Thus, claim 9 is not rendered obvious over the prior art references. Accordingly, Applicants respectfully submit that the grounds of rejection have been addressed and the rejection has been overcome. Reconsideration and withdrawal of the rejection are respectfully requested.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-10 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,
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